

Claims

1. A degassing centrifugal apparatus comprising a rotatable hollow rotor (20) connected to a fluid inlet (14) at one end and a liquid outlet (16) at the opposite end, and having a gas exhaust (36) connected to the center thereof, said apparatus having at its inlet end means for bringing a fluid to rotate on the inner wall of said rotor (20), characterized in that said apparatus comprises a turbine (30) at its outlet end.
2. An apparatus according to claim 1 wherein said turbine (30) is configured to recover at least a portion of the dynamic energy contained in a fluid flowing in said rotor (20).
3. An apparatus according to claim 1 wherein said turbine (30) forms part of said rotor structure and is rotatable with said rotor (20).
4. An apparatus according to claim 3 wherein said turbine (30) is located in a pumping zone formed in said rotor (20) at its outlet end.
5. An apparatus according to claim 4 wherein said pumping zone contains a turbine wheel (30) extending into a stationary liquid outlet (16).
6. An apparatus according to claim 5 wherein said turbine wheel (30) comprises shovels (32) forming between themselves arcuate channels (33) which are narrower at the outer periphery than at the inner periphery thereof.
7. An apparatus according to claim 1, wherein said hollow rotor (20) comprises an elongated tubular or conical gas separation drum (34) of an essentially circular cross-section.
8. A process for degassing a fluid by centrifuging, comprising
 - feeding a fluid containing a mixture of liquid and gas into an inlet of a rotating hollow rotor,
 - bringing said fluid to rotate on an inner wall of said rotor,
 - bringing said fluid to flow axially towards a liquid outlet at the opposite end of said rotor while causing said gas to separate from said liquid,
 - directing the resulting degassed liquid into a turbine at said opposite end of said rotor,

- discharging said degassed liquid through said turbine, and
- discharging said gas through a central gas exhaust.

9. A process according to claim 8, wherein said degassed liquid is discharged peripherically from said turbine at a pumping pressure.

10. A process according to claim 8, wherein said turbine recovers dynamic energy from said degassed liquid.

11. A process for producing paper or board in a paper machine including the steps of providing a papermaking stock of pulp; diluting said stock in one or more stages with backwater drained through a forming wire of said paper machine; feeding said stock through a head box of said paper machine onto said forming wire; forming a web on said forming wire while allowing water from said stock to drain through said wire; feeding said web through a press section and a drying section of said paper machine to provide paper or board, characterized in that at least a portion of said backwater and/or diluted stock is pumped with at least one degassing centrifugal apparatus comprising a rotatable hollow rotor (20) connected to an inlet (14) for said backwater or stock at one end and an outlet (16) for degassed backwater or stock at the opposite end, and having a gas exhaust (36) connected to the center thereof, said apparatus having at its inlet end means for bringing said backwater or stock to rotate on the inner wall of said rotor (20), and at its outlet end a turbine (30) for recovering energy from said rotating backwater or stock.